

CLAIMS

1. An intervertebral implant having a central axis (1) substantially parallel to or coaxial with the spinal column's axis, comprising

(A) an upper and a lower terminal part (2; 3) each fitted with an outermost surface (5; 6) configured transversely to the central axis (1) and each with a concave inner surface (7; 8) which are mutually opposite; and

(B) a joint element (4) configured between the terminal parts (2; 3) and resting in sliding manner against the concave inner surfaces (7; 8) of the two terminal parts (2; 3),

characterized in that

(C) the first concave inner surface (7) is a partial surface of a first external surface which is rotationally symmetrical about an axis of rotation (12) transverse to the central axis (1), and

(D) the second concave surface (8) is a partial surface of a second rotationally symmetrical conical external surface (16) having an axis of rotation (14) perpendicular to the central axis (1).

2. Intervertebral implant as claimed in claim 1, characterized in that the first axis of rotation (12) and the second axis of rotation (14) cross each other.

3. Intervertebral implant as claimed in either of claims 1 and 2, characterized in that the joint element (4) comprises at least one convex slide surface (9; 10) intersecting the central axis (1).

4. Intervertebral implant as claimed in claim 3, characterized in that the radii of curvature of the first concave inner surface (7) and of the slide surface (9) resting against the convex joint element (4) are different and in that the slide surface (7) is spherical, ellipsoidal or barrel-like whereby a point-like rest is made possible between the convex joint element (4) and the first concave inner surfaces (7).

5. Intervertebral implant as claimed in claim 3, characterized in that the radii of curvature of at least one of the slide surfaces (9; 10) at the convex joint element (4) and of at least one of the concave inner surfaces (7; 8) of the two terminal parts (2; 3) are different whereby linear rest may be implemented between the convex joint element (4) and one or both concave inner surfaces (7; 8).

6. Intervertebral implant as claimed in claim 3, characterized in that the first slide surface (9) of the joint element (4) is complementary to the concave inner surface (7) of the upper terminal part (2) and that the concave inner surface (7) together with the first slide surface (9) constitute the slide surfaces of a first joint rotatable about the first axis of rotation (12).

7. Intervertebral implant as claimed in either of claims 3 and 6, characterized in that the second slide surface (10) of the joint element (4) is complementary to the concave inner surface (8) of the lower terminal part (3) and in that the concave inner surface (8) together with the second slide surface (10) constitute the slide surfaces of a second joint rotatable about the second axis of rotation (14).

8. Intervertebral implant as claimed in one of claims 1 through 7, characterized in that the second axis of rotation (14) intersects the central axis (1) at an angle α between 60 and 88°.

9. Intervertebral implant as claimed in one of claims 1 through 8, characterized in that the rotationally symmetrical external surface (11) is a circularly cylindrical external surface.

10. Intervertebral implant as claimed in one of claims 1 through 8, characterized in that the rotationally symmetrical external surface (11) is a conical external surface.

11. Intervertebral implant as claimed in one of claims 1 through 10, characterized in that the first axis of rotation (12) and the second axis of rotation (14) are apart by a minimum distance A.

12. Intervertebral implant as claimed in claim 11, characterized in that the distance A is between 0 and 18 mm.

13. Intervertebral implant as claimed in one of claims 1 through 12, characterized in that the outermost surfaces (5; 6) exhibit a three-dimensional structure.

14. Intervertebral implant as claimed in one of claims 1 through 13, characterized in that the outermost surfaces (5; 6) are titanium grids that can be connected to the terminal parts (2; 3).

15. Intervertebral implant as claimed in one of claims 1 through 14, characterized in that

(a) the conical external surface (16) comprises a cone tip (18) situated on the second axis of rotation (14);

(b) the intervertebral implant comprises a front side (19) pointing at the cone tip (18) and opposite a rear side (20);

(c) at least one of the terminal parts (2; 3) comprises a first rotation-restricting stop (21) shortening the front side (19) of the intervertebral implant parallel to the central axis (1) about the first axis of rotation (12) at an angle of rotation β between 5 and 15°; and

(d) at least one of the terminal parts (2; 3) includes a rotation-restricting stop (22) shortening the rear side (20) of the intervertebral implant parallel to the central axis (1) about the first axis of rotation at an angle of rotation γ between 2 and 15°.

16. Intervertebral implant as claimed in one of claims 1 through 15, characterized in that it includes a third stop (23) restricting the rotation about the second axis of rotation (14) at a maximum angle of rotation δ between $\pm 5^\circ$ and $\pm 10^\circ$.

17. Intervertebral implant as claimed in one of claims 1 through 16, characterized in that at least one of the terminal parts (2; 3) is a three-element part and comprises an outermost cover plate (24), a joint pan (26) enclosing the concave inner surface (7; 8) and in-between an elastically deforming spacer (25).